EXTRACTIVE CAPITALISM

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How Commodities and Cronyism Drive the Global Economy

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To my beloved Alfred, May and Pablo

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INTRODUCTION

The gleaming cities of capital, the spires of skyscrapers, our handheld devices with access to avalanches of information, data centres that perform the millions of calculations our gadgets require to function, the transportation we take on land and sea or in the air all depend on the extraction of raw materials from the earth. We slash through forests, sink concrete rigs in deep and shallow waters, dig bottomless wells in near and far reaches or fracture the surface of the earth to reach ores and metals, coal, or oil and gas. In his magisterial book *How Europe Underdeveloped Africa*, Guyanese historian Walter Rodney enumerated the mechanisms that have made such extractive economies possible: 'the most carefully planned structures of interlocking directorates, holding companies, and giant corporations which were multinational both in their capital subscriptions and through the fact that their economic activities were dispersed in many lands'. Multinational corporations, which were some of the earliest tools of colonial control, are at the heart of

how extractive industries operate. To understand their inner workings we must peel back their shell companies, their ownership structures, their histories and their contemporary connections.

This book is about extractive capitalism, the global commercial ventures that mine for commodities, trade them across the seas, and channel vast profits from all corners of the world to a narrow pool of investors and shareholders. What is extractive capitalism? Primary commodities like sand, iron ore, bauxite, coal – and of course oil – are excavated, transported, refined or assayed, and then sold on at great markup. Where labour is unionised and legally protected, the process of extraction is increasingly automated. Where labour – or life – is cheap, many of the steps in the process of extraction are still performed manually. Think of ship-breaking in South Asia or stevedoring in Africa, which still rely on the power of human muscles rather than gleaming high-tech machinery. To understand how our globally and locally unequal world was made, extractive capitalism holds many of the answers.

Petroleum first extracted from subterranean reservoirs and offshore fields of North America suckled the rising US empire in the latter half of the nineteenth century. Starting just before the Second World War and rapidly accelerating after it, oil and gas from the world's faraway continents fuelled the country's economic expansion and

military reach. By the end of the 1950s, 65 per cent of the world's oil was controlled by oil companies headquartered in the US. North American (and British) oil majors – 'majors' being the name given to the world's biggest oil companies – paid a pittance for oil concessions that gave them effective sovereignty over not just other countries' resources, but also the political and socioeconomic policies that those countries enacted.

Modern capitalism has its roots in colonialism. The dispossession of indigenous people in Asia, Africa and Latin America enabled colonisers to take control of resources and expand international trade. The enslavement and transportation of millions of Africans across oceans and the extraction of resources gave rise to the global market. The United States in particular depended on the abundance of dispossessed indigenous lands and resources, coercively extracted enslaved labour, and the work of ever-increasing numbers of immigrants as the kernel of its particularly voracious brand of capitalism. So many of today's business practices, from the management of time and manufacturing lines to modern forms of business accounting, insurance calculations and mortality tables, were devised to facilitate colonialism and chattel slavery. These practices were adapted to an industrial world fuelled and fed first by coal, and later by oil. The discovery of oil – in the United States and abroad – created a whole range of new corporate norms and functions.

The world's logistical networks, enormous and complex transportation infrastructures, as well as fantasies of automating workers out of the picture, have their origins in the tight control of the entire oil production cycle by the British and North American oil majors from the late nineteenth century onwards. In the first half of the twentieth century, the parent companies and earlier incarnations of the 'Seven Sisters' – Anglo-Iranian Oil Company (BP), Gulf Oil, Standard Oil of California (Chevron), Standard Oil of New Jersey (Exxon), Standard Oil of New York (Mobil), Shell and Texaco – worked in tandem to build a cartel controlling the oil industry, with the support of successive American and British governments.

When the Seven Sisters controlled the world's oil reserves, the petroleum that was drawn out from the earth by an Anglo-American company was shipped by its tankers to its refineries on US and European shores, and the gasoline produced was sold in company-branded petrol stations across the world. Other refined products fed factories in the United States that manufactured plastics, industrial commodities, consumer products and electrical and electronic articles. The manufacture and operation of cars, trains, aeroplanes and ships was powered by diesel and jet fuel and gasoline; and they carried passengers, products and US military forces to the four corners of the globe. Along with the products moved by hydrocarbons have come attempts to homogenise and standardise

the way the world does business – methods that favour already powerful countries and disadvantage less powerful peoples and countries.

Extractive Capitalism is about who profits from these processes – and who loses, revealing the uneven apportioning of the bounties arising from oil and other commodities between the exploited and those whose pockets are fattened, both locally and globally. The book is about the seafarers on the container ships which carry our products who are then abandoned at sea by shipping firms, made invisible while we use their cargo. It shines a light on the wildly lucrative worlds of management consultants, commodity traders and insurance brokers. It looks not only at the working of the market in commodities, but also at the rules, regulations, governments, legal tribunals and secretive dealmakers and fraudsters that shape this commerce. It touches on the moments when militaries are marched to frontiers to protect the profits of private firms, and the geopolitical influence of either the United States and its allies or their rivals. And it looks at the costs: the decimation of our cities, the pollution of our waters, the degradation of our earth, our air made unbreathable. Each chapter approaches extractive capitalism from a different angle, and together these pieces form a coherent picture of this secretive and important aspect of global trade in commodities.

As the great Jamaican economist Norman Girvan has

observed, the post-Second World War compact between the United States and its European allies only deepened global asymmetries of wealth and power, and served as a catalyst for the rest of the world to demand decolonisation and sovereignty over their own resources. The nationalisation of oil, Girvan writes, was the first time in history that

> some non-industrialized countries had succeeded in securing market power in world trade in their export commodity, and they had used this market power to impose a substantial improvement in their terms of trade with the industrialized West. This rudely disrupted the established pattern of centre-periphery power relations that had governed the economic relationships between the developed countries and the Third World. It also served as an inspiration, a lever, and possibly a financial base for similar attempts by other Third World exporting countries to secure market power in other commodities.

The drive to nationalise resources, Girvan argues, was comparable to the popular mobilisation in the Global South and the revolutions and guerrilla wars raging on the peripheries of the Cold War. The struggle for resource sovereignty threatened the dominion of the North Atlantic world over the resources of the rest of the world, which they had hitherto claimed as their own. From the

moment that formerly colonised nations gained a degree of sovereignty over their own natural resources, they have struggled against Western powers to control the extraction of those resources on the global market.

To understand the struggles for resource sovereignty – the euphoric moments of anti-colonial movements and the lamentable disappointment of postcolonial states – one cannot better the life story of Abdullah Turayqi. Beyond the Arab world, if he is remembered at all, Turayqi – whose name is sometimes transcribed as Tariqi or Tariki – is, along with Venezuela's Juan Pablo Pérez Alfonzo, known as a co-founder of OPEC, the Organization of the Petroleum Exporting Countries. As a Saudi minister, he made a favourable impression on everyone he met in the 1950s and 1960s, including US oil company executives and diplomats in Saudi Arabia, who, despite acknowledging his probity and intelligence, ousted him from his position as the kingdom's first oil minister. Photographs of him from that time show a gorgeous man with a head of salt-and-pepper hair, a rakish smile, intelligent eyes and an air of serene, if mischievous, confidence. He was known to be charismatic, intellectually curious, generous and scrupulously honest. So much so that after his death he left behind no great material inheritance: his eldest son lives in a small flat in Poughkeepsie, New York, inherited from his mother. The 'Red Sheikh' was, and is – unlike the many royals and their cronies who got

fantastically rich at the public trough of oil – beloved of the Arab public.

Turayqi was orphaned at a young age, and family members who recognised his intelligence sent him to Bombay to apprentice with a merchant who plied his trade across the western Indian Ocean. He went on to receive his undergraduate degree in geology at Cairo University, where he met a great many peers from the Arabian Peninsula who would become well-known figures across the political spectrum in their home countries. Turayqi continued his education in the United States, where he received a master's degree from the Department of Petroleum Engineering at the University of Texas. After working for The Texas Company (Texaco) for a year, he returned to Saudi Arabia as an employee of the Arabian-American Oil Company (Aramco), then owned by Standard Oil of California and Texaco.

Although Turayqi died nearly thirty years ago, I feel a special attachment to him. He belonged to a generation of young people from the countries of the Global South who, in the decades after the Second World War, inspired by the fervour of decolonisation and revolutionary action, demanded a betterment of the lots of their citizens. They had a range of views and allegiances: from what Frantz Fanon called 'nationalist bourgeois' to communist. They undertook a technocratic education – in engineering, natural sciences, economics, medicine and the like – in

European and North American universities and returned home determined to wrest the control of their natural resources, their government institutions and their social and economic relations from the colonial or imperial Atlantic powers. My father – who had been a child when Iranian Prime Minister Mohammad Mosaddegh nationalised his country's oil in 1951 and was promptly deposed by a British- and US-backed coup two years later – received a doctorate in geology from a European university. I graduated with an undergraduate degree in chemical engineering from the same department where Turayqi had received his master's in petroleum engineering.

Like many of his peers, Turayqi was deeply affected by the racism he had experienced while receiving his education overseas. Upon his return to Saudi Arabia, he encountered the Jim Crow racial hierarchies at work in the Aramco plants and workers' compounds first-hand. He quickly learned the workings of the company, including the mechanisms for expatriation of maximum profit to the United States and the minimisation of payments made to the Saudi Arabian treasury. In 1959, Turayqi became one of the first Arab directors of Aramco, representing the Saudi government. A year later he co-founded OPEC and became oil minister, only to be deposed from his position after fifteen months, having accused the Saud ruling family of corruption. Many years later, in a 1972 essay, he lamented that Arab graduates came back from

foreign countries, bursting with ideas and resolve, only to be so thoroughly excluded from the best positions in foreign firms that they became resigned to emigration or the safety and torpor of a government job. After his ousting Turayqi went into exile in Beirut, where he set up a consulting firm to advise oil bureaucrats from producing states negotiating with European and North American oil companies. He also published accessible Arabic-language magazines to educate the Arab public about oil. These magazines, and Turayqi's articles within them, offer a rich insight into the production cycle of oil and the global structures it generated.

In his writing, oil was not a source of profit but a public good. The vast reservoirs of oil, hoarded by a cartel of seven major Anglo-American producers, he wrote, should be nationalised. Oil revenues were to be redistributed across all borders, whether in producing states or not, to improve public services. Producing countries would control pricing and volumes of oil extracted and sold, thus giving them sovereignty over their natural resources. Control over one's oil would give the states political leverage against colonial and neocolonial powers, including Israel (the famous 'oil weapon'). The focus for state-owned extraction would be on transforming oil into value-added products like jet fuel, plastics or petrochemicals rather than burning it, thus enriching not only the producing states' treasuries but also their technological know-how.

Very little of this has come to pass. Oil has been nationalised, but primarily to the benefit of the ruling elite of the producing states. Borders between oil producers and consumers have hardened and their inequality has only deepened, though the movement of commodities and capital across borders is frequently thought of as 'frictionless'. Despite the brouhaha over the Arab oil boycott in 1973, none of the Arab states reduced their production at that time, nor did any of their target states suffer a shortage of imported Arab oil. National ownership of oil has reproduced colonial political relations, but at regional geographic scale. Only in the early years could OPEC states expect to set prices, and only in the last few years have OPEC states focused on value-added production. Meanwhile, new financial instruments, new forms of shipping, new standards of accounting and engineering, new rules of arbitration, and expanded markets for arms trading have all been cultivated, so that the flow of petrodollars remains unidirectional. Management consulting firms, private equity and asset management funds and various other financial and business services lubricate the machinery of capital accumulation and deepen the chasms of inequality. Ever-larger shipping companies, in ever-larger ships flagged to offshore havens, make possible the movement of capital and cargo around the globe. Workers on sea and on shore, indigenous communities whose lands lie on the transit routes for polluting commodities, traders

and management consultants high on cocaine and fabulous profits, and officious government officials protecting their cronies are all part of this world. In the Middle East, states like Abu Dhabi and Israel, ruled by belligerent militarist governments and dubbed 'little Spartas' by admiring US Army generals, not only act as 'stationary aircraft carriers' for the United States but also wield their own deadly powers to control near and far regional countries, through arming proxies, laying military sieges and bombing civilian infrastructures. Amid all this, the people who do the work – the merchant seafarers who carry the goods, the oil workers who extract the black stuff from the bowels of the earth, the ordinary people whose lives are affected by the desecration of their environments – are abased and abused, when not wholly forgotten.

The bloodied world we live in is *not* the world of Turayqi's imaginings.

SHIPPING OIL

Fly over ocean anchorages near the world's largest oil ports, and you'll see a tangle of cargo ships waiting to bunker (refuel), and tankers of all sizes radiating out from the loading buoys, queueing to unload or load their cargo.

Oil ports often – though not always – boast proximity to both tank farms and refineries. These oil facilities are usually visible in their totality only from the air or from the sea, with loading buoys sometimes a mile or more away from the shore itself, and the ships anchoring still further out to sea. Tank farms tend to be hidden behind layers of barbed wire, and strips of wasteland often separate them from nearby roads, villages and towns. These interconnected coastal infrastructures reveal the extent to which the extraction, storage, pricing and sale of petroleum and petrochemical products is not just dependent on how these products are transported across oceans, but is fundamentally defined by it. The politics of maritime circulation are bound up with the asymmetries of power typical in extractive industries: the unbalanced relationship

between producing nations and the consumers; between producers of crude and those who refine the oil; between those who work on the ships, tank farms and infrastructures and those who profit from them; among hegemonic leviathans, rising global powers and those struggling against imperial economic arrangements. These asymmetries are hidden behind the security fences and complex jargon of energy and logistics, deliberately made invisible.

But a series of recent events have made the internal mechanics of this clockwork apparatus much more legible, even to those who do not speak the language of capitalist logistics: the Houthi blockade of the Red Sea and the Malaysian boycott of Israeli ships in support of Palestinians, and the stoppages through the Suez and Panama Canals – Suez having been blocked in 2021 by a mega-freighter run aground, and trade through Panama disrupted because of low water levels affecting the canal's lock system. But the most decisive event was the logistical glitches wrought by the Covid-19 pandemic, starting in December 2019.

In late April 2020, an image circulated on social media that looked like a screen capture from a ship-tracking application. These types of apps are commercial products that draw on GPS data and ships' AISs (automatic identification systems) to track the movement of vessels across the oceans. They also provide information about what kind of

ships the small markers on the map represent (container vessels, bulk carriers, roll-on/roll-off vehicle carriers, pleasure yachts and the like), what cargo they carry, a history of that ship, and a map of their current route.

The image, which quickly went viral, was a map focused on the Western Hemisphere that showed clusters of stationary tankers along the coasts of Africa, the Americas and Europe. Because so much transportation and factory production had ceased due to the pandemic, the demand for oil dramatically dropped. Simultaneously, a price war triggered by Saudi Arabia against Russia flooded the market with oil. With oil production rising and demand plummeting, landside tank farms and storage spaces began to run at or near capacity. Oil producers and buyers were soon chartering tankers to store oil at sea. By mid-April, the cost of chartering an Ultra-Large Crude Carrier was up to $350,000 per day, double what it had been a scant few weeks before. Instead of oil being delivered to new buyers and markets, vast quantities of it were in stasis, in tankers at anchor in oil ports around the world.

Under the map's ostensibly static image of ships waiting for a move in the market was another story: that of a historically unprecedented moment when the price of oil plummeted below zero. While the computer screens of the financial systems strobed with the plunging prices of most petroleum products on 20 April, maritime tracking screens traced the paths of tankers gathering in ever-denser

clusters near oil and bunkering ports, waiting to load and unload. Ships were anchored along the coasts of Venezuela, the Gulf of Mexico, southern California, Mexico, the west coast of Africa, near the straits of Malacca and Hormuz and all along the shores of East Asia. Although we cannot know whether these ships were simply acting as storage or were in fact in transit, we do know that many shipping companies changed their routes between Europe and Asia as a direct result of the oil glut. When the price of oil – and therefore of ships' fuel – drops, and when ships carrying goods are in no hurry to get to their destination, it becomes cheaper for them to take longer routes. It was more cost-effective for an oil tanker in the Indian Ocean to round the Cape of Good Hope than pay the passage fees for the Suez Canal. Longer routes and 'slow steaming' may add a few weeks to the journey itself, but they save the shipping companies money. These cost savings are balanced against a delay in promised delivery, the possibility of having to wait at anchor before unloading or loading goods, the length of additional time seafarers may have to spend on the ship, and even possible threats to the safety of the seafarers.

I experienced the effects of something like this when travelling aboard container ships, once in early 2015 during a roaring period of global trade, and once in mid-2016 after a precipitous drop in the volumes of global trade. During the first journey, the ship's captain was ordered

by the company to steam at maximum speed through the Red Sea, round the Arabian Peninsula and into the Gulf of Oman. The ship, commanded thus, peeled off from the convoy of vessels that pass through the Gulf of Aden together as a precaution against piracy and hugged the coasts of Yemen and Oman in order to cut a few nautical miles out of the route, at very high speed, consuming huge amounts of fuel. On the second journey, with commerce in a lull, any kind of cargo that could earn some profit was needed, and fuel-cost savings were more important. As such, midway through the trip, a new port was added to the route so as to load a few more containers for carriage, with the ship all the while steaming at very slow speeds.

During the pandemic this logic was writ large, as more than 500 shipping journeys were cancelled between Asia and Europe or the Americas throughout March and April 2020. Those that did traverse their planned routes had reduced numbers of containers and travelled along their routes at extremely slow speeds (sometimes at a quarter of the usual speed). Even ships steaming from the Eastern Mediterranean chose to pass through the Strait of Gibraltar and go round the southern tip of Africa rather than pay the fees for the much more proximate Suez Canal. The Cape route also allowed for economies of scale in the transportation of goods. The canal's depth and width places certain limits on the size of ships passing through

it. Suezmax ships are about 275 metres long and have a draught of 12.2 metres – a ship's 'draught' being the maximum depth of the hull and propellors that can safely be below the waterline. The ships now loading crude from the Ceyhan oil terminal in Turkey are Very Large Crude Carriers (VLCCs) or Ultra-Large Crude Carriers (ULCCs), some with a draught of more than 20 metres and most with lengths exceeding 350 metres.

On the 21 April map, some ships are pointed away from Nigeria or Venezuela and seem to be steaming towards the Cape of Good Hope, presumably on their way to Asia. China imports the vast majority of its oil – 90 per cent of it – by sea, but the country is nowhere near the largest global consumer of oil. The US consumes 20 per cent of all the oil produced worldwide, whereas China only takes 13.5 per cent. The 21 April map cannot, therefore, be taken as a snapshot of the global oil trade, because so much of it happens within borders or without maritime circulation. The US is both an exporter and importer of petroleum. Much of what the US imports arrives through pipelines from Canada or Mexico and is intended for refineries which are configured to process particular kinds of oil produced north and south of its borders: they can take crudes that are heavy or light in density, or sour or sweet – which is to say, containing more or less sulphur. The large number of refineries in the Gulf of Mexico also distinguishes US consumption of oil from Chinese.

US refining capacity outstrips that of all other countries – Texas alone has greater refining capacity than all of China – but, more importantly, its refineries produce products like jet fuel or gasoline which are sold at higher market prices than unprocessed crude. As such, US refineries' ability to convert raw commodities to value-added products far outstrips all other countries. Why does this matter for maritime transport?

Those enormous VLCCs and ULCCs that often only carry crude oil depend on extractive economies and trade in raw materials, a hallmark of colonial economic relations. Smaller tankers, by contrast, often carry refined products. So, chartering a broader range of ship sizes indicates how much of a producer's products are sold as cheaper crude, and how much as value-added product. And if you build an oil port that only exports crude via the largest of ships, then you may not sell more profitable value-added products. Indeed, in the aftermath of the nationalisation of oil in the Gulf in the 1970s, many of the Gulf countries turned to increasing their refining capacity as a means of keeping more profits from value-added products, and through acquiring petrochemical manufacturing technology and know-how. The 1970s nationalisers were not fiery revolutionaries expropriating US or European oil companies, as the more radical nationalisers had been in decades past in places like Iran or Mexico, where they had seized the oil companies outright. They were technocrats

from producing nations of the Gulf politely negotiating the buyout of their national oil from North American and European oil majors.

These technocrats understood the benefits of downstream value-added production and control over the circulation of their own products. In a fascinating 1975 *New York Times* account of a failing shipyard in Belfast, a sales representative of the shipyard, 'back from a sales tour of Saudi Arabia, Kuwait, Abu Dhabi and Iraq', laments that, instead of large tankers, the Arabs were ordering smaller vessels to carry refined petroleum products such as kerosene and gasoline. 'They won't need them until four or five years from now,' he said, 'when they will have the refining capacity to make the products.' As Walter Rodney has noted, the emphasis on trade of raw materials, rather than on production of more expensive manufactured goods, privileged traders over producers, delayed technological innovation and led to economic stagnation and intensified exploitation of both humans and natural resources.

Whether producer countries can profit from the full value of their exports or not, economic development is a double-edged sword. Both the production and the circulation of petrochemicals have dramatic ecological effects. The same shale oil which has, since the deregulation of fracking, boosted the position of the US as an exporter of oil also leads to the devastation of groundwaters and soil in spaces inhabited by indigenous peoples. The indigenous

and First Nations people of the US and Canada have been struggling against devastating extractive industries defacing and destroying their lands for centuries. Most recently, however, the Water Protectors of Standing Rock, in the Dakotas, and their Wet'suwet'en counterparts further north have campaigned against the construction of pipelines across their lands. The struggle of the Water Protectors of Standing Rock, however, was crushed by militarised police forces, while the Wet'suwet'en campaign – which included a widely supported blockade of logistical lines – was deferred because of the pandemic, though the blockade has picked up again thereafter. The liberationist indigenous environmental movements of western Canada were countered in the east by a right-wing truckers' blockade of Ottawa against both vaccine mandates and demands for indigenous sovereignty. The right to burn fossil fuels unfettered by regulations was eventually appended to the truckers' initial demands. The environmental degradation wrought by fossil fuels has become – and has already been – a significant point of contention between the left and the right.

Maritime transportation of oil devastates the environment. Tanker transport is responsible for at least a quarter of all oil spills at sea. And aside from catastrophic large-scale oil spills, ship collisions or groundings can lead to the leakage of oil and petroleum products during loading and

unloading. On oil-rich coasts around the world, beaches are often strewn with lumps of tar that have formed at sea and washed ashore. Ships can release ballast water in illegal ways, and although ballast tanks and oil or fuel tanks are supposed to be separate, dirty ballast water, released in unregulated or lightly regulated ports, can introduce dangerous pollutants into the marine environment. Ships also produce enormous air pollution. If they are at anchor for days, even weeks, on end, the chance of their illicit discharge of all sorts of waste will also increase, and their engines will inevitably produce oxides of carbon and nitrogen, sulphur compounds and particulate matters.

The tumbling of global trade, the closure of borders, the historically high unemployment, and therefore plummeting demand for oil wrought by the pandemic all sketched the contours of a changing map for the maritime movement of oil and extractive capitalism, a shifting context that now, five years on from the first lockdowns, is still unsettled. But the real levers of transformation were and are political. In response to the pandemic, businesses consolidated their positions and policymakers rallied around capital to ensure that pandemic-era reforms did not permanently handicap the ability of businesses to accumulate profits. As trade was hobbled, various states such as France and South Korea bailed out their oil and shipping companies. The US maintained its hegemonic role as the greatest consumer and the greatest producer of oil (and, inevitably,

the greatest polluter) throughout and after the pandemic. China and India slowly took up the oceans of oil stored at sea as their factories reopened.

The pandemic has midwifed a new era of catastrophe: capital has proven remarkably resilient in the face of crisis, even successive ones. Any real transformation – in how we produce and circulate and consume energy, in who benefits and who suffers from the effects of producing and circulating petroleum and its products – has come and will only come through concerted political action: one that binds the struggle against the uneven planetary distribution of wealth and power to movements to save the environment.

A WORLD BUILT ON SAND AND OIL

Oil and sand are not often commodities that we talk about together when discussing global trade. The first is the motive engine of industry and transportation, fuel for heating and illumination, the spirit that animates much of global politics. Even when priced cheaply – as I write, the price of oil hovers around $83 per barrel (or around $630 per tonne) – it is considered precious. Humble, ordinary, oft-overlooked sand is, by contrast, the second most consumed natural resource in the world by volume after water. It makes concrete and glass and electronics possible. According to the UN Environment Programme, at least 50 billion tonnes of sand (often measured in aggregate with gravel) are used annually, in contrast with 4 billion tonnes of oil. Yet sand is not often thought of as valuable: its trade is more domestic than global, and its market price per tonne is under $9 in the United States and far less than that in the rest of the world.

But there are similarities, too. While China is the biggest importer of both products, the United States is the world's

largest consumer of oil and the third-largest user of sand (after China and Japan). Depending on its market price, crude oil is often the most or second most exported good in the world by value. Today's relatively low prices put crude oil exports in second place, after automobiles. At the end of 2015, the US government rescinded a forty-year ban on the export of crude oil from its shores, and since then the country has aggressively re-entered the global oil market, becoming the world's third- or fourth-largest exporter of petroleum and its refined products, behind – at different times – Saudi Arabia, Russia and Canada. Despite being the largest oil producer, the US is not the world's largest exporter, because it consumes most of what it produces. The vast majority of the trade in sand is domestic, and the US and China extract the sand they need for construction and industry from their own territories. The world's biggest importer of sand, however, is Singapore, which uses great volumes of the stuff in its frenetic projects of land reclamation.

The two commodities converge in one other regard. Their commodification and trade hold mirrors to global inequalities and ecological plunder. Both are produced over aeons, the one a product of fossilisation of prehistoric flora and fauna, the other the debris of rocks' encounter with wind and water. Both tar and dirt symbolise inferior material. And yet the moment at which they became pivotal to industrialisation and urbanisation, rocks are blasted, wells

are drilled to sepulchral depths, rivers are dredged, beaches are bulldozed away to enable the transformation of these natural resources into commodities. The inexorable movement of oil and sand through the veins of global trade tells us about the shapeshifting ways of production, colonial forms of exploitation, and our reckless wrecking of the global environmental commons. Extractive capitalism is about how the commodification of prosaic everyday things affects lives here, now, and half a world away.

If you look around you, you will inevitably see objects, places, things containing sand. Sand is dredged out of a riverbed or a seafloor in one place and poured into the shallows in another place to conjure land out of the sea. Sand and gravel are used to make concrete, today the most widely used building material in the world. Mixed with tar, sand and gravel become asphalt. The silica in sand is extracted to manufacture all grades of glass, as well as semiconductors and integrated circuits used in electronics. Even hydraulic fracturing, or fracking, requires sand. The urbanisation of the world, the meteoric growth in the production of electronics, and the expansion of the use of glass in everything from windows and fibreglass to screens for automobiles and electronics has increased the demand for sand. But the largest consumer of sand remains the construction industry.

Throughout human history, sand and gravel have been

used to raise buildings, pave roads and make glassware. Monumental structures of ancient times – the Great Wall of China, Roman aqueducts and amphitheatres, and ziggurats and pyramids in Mesopotamia and the Americas – used either early versions of concrete (blending some adhesive with sand and gravel) or fired mud bricks made from a mixture of sand and clay. The massive blocks of stone for the pyramids in Egypt were dragged into place on beds of sand. Glass-cutting techniques were employed in the Sassanian Empire in Persia 1500 years ago, and glass windowpanes made from sand quartz and ash were known in Roman Alexandria nearly 2,000 years ago, though they were opaque, small and thick. Until the early modern period, glass panes were – like many other technologies – reserved for elite institutions both sacred and profane: cathedrals, *jami'* mosques and grand administrative buildings. The glorious Hagia Sophia, built in the sixth century, was illuminated by large glass panes in its dome. Urbanisation in the industrial era fuelled an appetite for the sand and gravel needed for the expansion of cities and the roads and railroads that connected them. But until recently, the sand and gravel used for these purposes were almost always mined and transported locally. The exceptions were prized construction materials such as specially coloured marbles and hardwood timber. Transporting such heavy cargo using either human or animal force was costly and slow.

The oceanic transportation of building materials took off only from the fifteenth century onwards, with the colossal expansion of maritime trade that came with colonialism. Sand and gravel were not immediately considered commodities to be traded across the seas; they were shipped around the world only as a side effect of seaborne trade itself. Ships are 'in ballast' when not carrying cargo: when not laden, they float too close to the surface of the sea and can list. Ships not in cargo have to carry ballast to sail true.

Before steamships fuelled by coal (which acted as ballast), sand, gravel and shingle were used to balance the weight of the ship. Landscapes were harvested for ballast, which was then dumped on quaysides halfway around the world. The discarded gravel and shingle from the ballast hills were employed in roads, buildings and railroads, all of which underwent continent-wide expansion in Europe and the Americas in the nineteenth century. The trade in sand and gravel as commodities in their own right only began in earnest in the twentieth century. Modernist concrete architecture, with its large windows and the later fashion for glass cladding in ever-expanding cities, demanded a concerted and organised trade in sand. Accidental ballast was no longer enough to feed the world's hunger for concrete. And when the electronics market became a global industry at the end of the twentieth century, the search for industrial-quality sand became even more urgent.

Not all sand is created equal. The fine sand of the desert, stretching for miles across the arid climates, has been eroded by wind, becoming too uniform in size and too even in shape to make good concrete. Concrete is manufactured by mixing cement with a larger proportion of sand; unevenly sized and shaped grains of sand better facilitate the adhesive effect desired of cement. The grains of water-eroded sand are irregular in shape and dissimilar in size and thus ideal for making concrete. As the demand for concrete has skyrocketed and technologies for making it have improved in the past fifty years, the world has grown famished for sand. Residential and commercial buildings, agglomerations of skyscrapers and sprawling exurbs all devour concrete. Land reclamation requires pouring dredging by-products, sand and concrete blocks into the sea, creating property *ex nihilo*. Islands such as Bahrain and Singapore have pushed their land mass further into the sea through this process. A 2014 *Financial Times* investigative report showed that a secretive investment vehicle owned by Bahraini royals was granted deeds to undersea plots of land; after reclamation these became coveted and expensive ground for the development of luxury hotels and commercial buildings. By some accounts, China has used more cement between 2011 and 2013 than the US did in all of the twentieth century. If concrete requires at least twice as much sand as cement, then the volume of sand involved in producing billions of tonnes of concrete today boggles the mind.

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Over the millennia, oil, naturally seeping out of the earth, has been used as fuel for lamps and heaters and as an emollient for skin ailments. The exploitation of petroleum at an industrial scale began with hand-dug wells in Russia's Azerbaijan region, a decade or so before oil gushers were drilled in mid-nineteenth-century Pennsylvania. The gradual replacement of coal by petroleum as a source of energy took nearly a century and was not linear or decisive, nor is it entirely complete. It was a transformation intimately bound up with the global ambitions of the earliest oil companies. The large-scale extraction of oil in the US was concurrent with the country's rise as a global economic power and with its colonial expansion, both across the west of the North American continent and in the Caribbean and the Pacific. On the other side of the Atlantic, Britain's control over vast coal reserves drove industrialisation and fuelled the colonisation of enormous expanses of Asia and Africa. Though Britain did not try to control oil production at first, its commercial fleets were the largest in the world, carrying other countries' petroleum across the oceans. As British coal production gradually declined in the first half of the twentieth century, Britain consolidated power in the Middle East by eventually gaining control of oil production there. For a time, using oil, rather than coal, as the fuel for its ships also extended Britain's long-standing maritime mastery.

Outside the United States, oil was most abundant in places where the great powers had already asserted claims to dominion: the southern Caribbean, contested by both the US through the Monroe Doctrine and by the British Empire; in the Caspian Basin, where strategic inter-imperial contests gave way to anti-Bolshevik activities by Euro-American powers; and the Persian Gulf and South East Asia, where Britain (and later the US) held sway. In all these places, the exploration of oil was intimately bound up with colonial regimes of labour exploitation and an international colour line that facilitated them.

The magisterial *Cities of Salt* (1984) by the late Saudi author Abdul Rahman Munif is a petro-novel that richly describes these global hierarchies, and which gives us a rare peep behind the barbed wire and high fences of the oil industry. Incorporating magical realism, satire and folk-story tropes – and portraying a cast of hundreds of Arabs, Americans and Europeans – Munif mines invisible and forgotten tales of oases destroyed, dissenters assassinated, strikes broken, and potentates and technocrats bought by oil companies. This is a world of exploited workers and engineers trapped in pecking orders shaped by race and geography. The Americans of his story are the masters to whom even the local emirs and dignitaries pay obeisance. After them come the Europeans, and below them are the English-speaking skilled Arabs, mostly from other lands. The men who do the gruelling

menial work are the Arabs who were formerly fishermen and pastoralists and whose autonomy has become hostage to wage work.

As an account of extractive industry, in its early years and today, *Cities of Salt* is completely veracious. Such racial ordering of labour remains in force aboard the massive tankers that trade in oil today. While seafaring crews hail from the Global South (largely from the Philippines), the officers are often Russians or eastern Europeans, and officers and crews are paid radically different wages based on their countries of origin. The stratification of labour has been exacerbated by the emergence of 'open registries', or what the International Transport Workers' Federation calls 'flags of convenience'. These registries allow for offshoring of ships' legal frameworks in havens where labour and environmental regulation indulge the shipowners. Many more tankers than container ships are flagged to open registries, in part because the very history of flags of convenience was forged in the oil trade, and in part due to the market fragmentation of the tanker trade, making it more vulnerable to profiteering.

The trade in oil under flags of convenience was considered such fertile ground for profit that after the end of the Second World War, when Greek shipping magnates cornered the market on oceanic transportation, the cleverest (or most unscrupulous) of them, Aristotle Onassis, bet everything he had on oil tankers. While his Greek rivals

were buying up bulk carriers, suitable for transporting ore and grain, Onassis bought decommissioned oil tankers from the wartime US Transportation Command at a steep discount and commissioned new ships with novel – if somewhat shady – methods of finance, deploying them all to transport oil to countries in desperate need of fuel to fire up post-war reconstruction and development. Doris Lilly, one of his many biographers, hinted at another reason why oil tankers were such a good bargain for Onassis. Even in the earliest decades, tanker loading and unloading was a far more automated process than loading dry-cargo ships. You needed pipes to carry oil to the ship that were capable of latching on to the vessel's holding tanks, and valves and sensors to gauge how full the hold was, but you only required a handful of workers to manage the whole process. Loading bags and pallets required far too many stevedores at the docks, many unionised, demanding fair wages and safe working conditions. Reducing the number of workers at the docks, Onassis likely reasoned, reduced the possibility of worker resistance and increased the efficiency of loading and unloading.

Onassis's astonishing rise through the prosperous ranks of global tycoons gave him a confidence that only one of the world's wealthiest oil companies could deflate. In the 1950s, Aramco, a subsidiary of Standard Oil of California (later Chevron), had a concession from Saudi Arabia for the production of oil, but its agreement did not specify the

terms of export. Onassis attempted to subvert Aramco's monopoly over oil transportation by lobbying the Saudi government for an exclusive concession to ship the country's oil. This was too much not only for Standard Oil but also for other de facto masters of oil in the region. For a time, fear reigned that Saudi Arabia might follow Iran's example and nationalise its oil. Why else would it want an independent tanker company? A motley group of concerned actors – from the CIA and the Dulles brothers to Her Majesty's Government in London and another shipping mogul, Stavros Niarchos – came together to defend Aramco against such impudence. Onassis's ships were boycotted by all oil companies, including Aramco's rivals. Diplomats and spies flew to Riyadh to lobby the king to withdraw Onassis's concession. As a last resort, Aramco lodged a case against Saudi Arabia (and by extension, Onassis) in a commercial arbitration tribunal in Europe. A powerful group of European and US jurists ruled against Saudi Arabia and declared that its oil-production concession agreement had given some measure of sovereignty to Aramco. It was a decision that defended the rights of powerful Western corporations against countries from the Global South asserting jurisdiction over their own oil and control over the operation and management of their own trade. For a time, the supremacy of the Western oil companies was restored.

Such strong-arm tactics were not new. These methods

have long been in effect in extractive industries. Some combination of trade boycott, commercial arbitration and violent intervention had already been used in attempts to bring intransigent nationalisers of oil to heel. When the Soviets nationalised Baku's oil companies (including that of the Swedish Nobel family) in 1920, it triggered a dramatic decline in Azerbaijan's share of the global oil market. Mexico's nationalisation of oil in 1938 moved Western oil companies to stipulate that all future concession contracts – not just in Mexico but worldwide – should be arbitrated in international courts, a convention which benefited Aramco twenty years later. Iran's nationalisation of the Anglo-Iranian Oil Company (later BP) in 1951 led to a shipping boycott of Iranian oil and a violent British- and US-engineered coup d'état to replace the nationalist prime minister Mohammad Mosaddegh. Indeed, much of the nationalisation of oil companies in the Arab oil-producing states in the 1970s only became possible after those states made exorbitant payments to the former owners of their oil industries, and gave these foreign firms political and financial guarantees to remain primary investors in the new oil industries. Once Middle Eastern oil was nationalised, a press and political campaign began in the North Atlantic countries to portray OPEC as the villain holding the world to ransom. The old stories of Western oil company depredations were forgotten, except in those places where the violence they had brought had indelibly